THE MISSISSIPPI TRAUMA CARE SYSTEM REGULATIONS

Mississippi State Department of Health

Emergency Medical Services

P.O. Box 1700

Jackson, Mississippi 39215-1700

The following changes to the Mississippi Trauma Care Regulations were adopted at the July 9, 2003 State Board of Health Meeting.

Changes are identified in bold and underline or strikethrough

July 2003

XI. Level I Trauma Centers

Level I trauma centers shall act as regional tertiary care facilities at the hub of the trauma care system. The facility must have the ability to provide leadership and total care for every aspect of injury from prevention to rehabilitation. As a tertiary facility, the Level I trauma center must have adequate depth of resources and personnel.

The Level I trauma centers in the State of Mississippi have the responsibility of providing leadership in education, trauma prevention, research and system planning.

I. HOSPITAL ORGANIZATION

A. Trauma Program

There must be a written commitment on behalf of the entire facility to the organization of trauma care. The trauma program must be established and recognized by the medical staff and hospital administration. The trauma program must come under the direction of a board-certified surgeon with special interest in trauma care. An identified hospital administrative leader must work closely with the trauma medical director to establish and maintain the components of the trauma program including appropriate financial support. The trauma program location in the organizational structure of the hospital must be such that it may interact effectively with at least equal authority with other departments providing patient care. The administrative structure should minimally include an administrator, medical director, trauma program manager (TPM), trauma registrar and the appropriate support staff. Administrative support includes human resources, education activities, community outreach activities, and research. The trauma program must be multidisciplinary in nature and the performance improvement evaluation of this care should be extended to all the involved departments.

B. Trauma Service

The trauma service must be established and recognized by the medical staff and be responsible for the overall coordination and management of the system of care rendered to the injured patient. The trauma service will vary in each organization depending on the needs of the patient and the resources available. The trauma service must come under the organization and direction of a surgeon who is board certified with special interest in trauma care. All patients with multiple system trauma or major injury must be evaluated by the trauma service. The surgeon responsible for the overall care of the patient must be identified.

C. Trauma Team

The team approach is optimal in the care of the multiple injured patient. Policies

should be in place describing the respective role of all personnel on the trauma team. The composition of the trauma team in any hospital will depend on the characteristics of the hospital and it's staff. In some instances a tiered response may be appropriate. If a tiered response is employed written policy must be in place and the system monitored by the PI process. The team leader must be a qualified general surgeon. This team leader who is responsible for directing the initial resuscitation of the trauma patient must be certified in The American College of Surgeons Advanced Trauma Life Support (ATLS). Suggested composition of the trauma team for a severely injured patient may include:

- Anesthesiologist
- Emergency Physicians
- Laboratory Technicians
- Mental Health/Social Services/ Pastoral Care
- Nurses: ED, OR, ICU, etc.
- Security officers
- Pediatricians
- Physician Specialist as dictated by clinical needs
- Radiology Technicians
- Respiratory Therapist
- General/Trauma Surgeon

D. Medical Director

The medical director plays an important administrative role. The medical director must be a board-certified surgeon with special interest in trauma care. The medical director will be responsible for developing a performance improvement process and will have overall accountability and administrative authority for the trauma program. The medical director must be given administrative support to implement the requirements specified by the State trauma plan. The director is responsible for working with the credentialing process of the hospital, and in consultation with the appropriate service chiefs, for recommending appointment and removal of physicians from the trauma team. He should cooperate with nursing administration to support the nursing needs of the trauma patient and develop treatment protocols for the trauma patients. The director in collaboration with the Trauma Program Manager/TPM should coordinate the budgetary process for the trauma program. The director must be currently certified in Advanced Trauma Life Support (ATLS), maintain personal involvement in care of the injured, maintain education in trauma care, and maintain involvement in professional organizations. The trauma director must be actively involved with the trauma system development at the community, regional and state level.

NOTE: ATLS requirements may take up to five years to obtain. After January 1, 2004, physicians must obtain ATLS within one year. **This ATLS verification must be recognized by the American Board of Medical Specialities. ATLS requirements is waived for Board Certified Emergency Medicine and Board Certified General Surgery Physicians.**

E. Multidisciplinary Trauma Committee

Each trauma center may choose to have one or more committees as needed to accomplish the task. One committee should be multidisciplinary and focus on program oversight and leadership. The major focus will be on PI activities, policy development, communication among all team members, establishment of standards of care, and education and outreach programs for injury prevention. The committee has administrative and systematic control including all program related services, meets regularly, takes attendance, maintains minutes and works to correct overall program deficiencies to optimize patient care. Suggested membership for the committee includes representatives from:

- Administration
- Anesthesia
- Emergency Medicine
- General Surgery
- Intensive Care
- Laboratory
- Neurosurgery
- Nursing
- Operating Room
- Orthopedics
- Pediatrics
- Prehospital Care Providers
- Radiology
- Rehabilitation
- Respiratory Therapy
- Trauma Program Manager/TPM

The clinical managers (or designees) of the departments involved with trauma care should play an active role with the committee.

The trauma center may wish to accomplish performance improvement activities in this committee or develop a separate peer review committee. This committee should handle peer review independent from department based review. The committee must meet regularly and maintain attendance and minutes. This committee must report findings to the overall hospital performance improvement program.

F. Trauma Program Manager/TPM

Level I trauma centers must have a registered nurse working full time in the role of Trauma Program Manager/TPM. Working in conjunction with the medical director, the Trauma Program Manager/TPM is responsible for organization of the program and all systems necessary for the multidisciplinary approach throughout the continuum of trauma care. The Trauma Program Manager/TPM is responsible for working with the trauma team to assure optimal patient care. There are many requirements for data coordination and performance improvement, education and prevention activities incumbent upon this position.

The Trauma Program Manager/TPM or his/hers designee should offer or coordinate services for trauma education. The Trauma Program Manager/TPM should liaison with local EMS personnel, the Department, Regional Trauma Advisory Committee and other trauma centers.

G. Hospital Departments/Divisions/Sections

The Level I trauma center must have the following departments, divisions, or sections: General Surgery, Neurological Surgery, Orthopedic Surgery, Emergency Medicine and Anesthesia.

II. CLINICAL COMPONENTS

A. Level I trauma centers must maintain published call schedules and have the following medical specialist immediately available 24 hours/day:

- Emergency Medicine (In-house 24 hours/day)
- Trauma/General Surgery (In-house 24/hours)[1]
- Anesthesia (In-house 24 hours/day)[2]

The following specialists must be on-call and promptly available 24 hours/day:

- Cardiac Surgery
- Cardiology
- Critical Care Medicine
- Hand Surgery
- Infectious Disease
- Microvascular Surgery
- Nephrology
- Neurologic Surgery[3]
- Nutritional Support

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1 The trauma surgeon on-call must be unencumbered and immediately available to respond to the trauma patient. The 24 hour-in-house availability of the attending surgeon is the most direct method for providing this involvement. A PGY 4 or 5 resident may be approved to begin the resuscitation while awaiting the arrival of the attending surgeon but cannot be considered a replacement for the attending surgeon in the ED. This may allow the attending surgeon to take call from outside the hospital. The general surgeon is expected to be in the emergency department upon arrival of the seriously injured patient. Hospital policy must be established to define conditions requiring the trauma surgeon's presence with the clear requirement on the part of the hospital and surgeon that the surgeon will participate in the early care of the patient. The trauma surgeon's participation in major therapeutic decisions, presence in the emergency department for major resuscitation and presence at operative procedures is mandatory. There must be a back-up surgeon schedule published. The surgeon on-call must be dedicated to the trauma center and not on-call to any other hospital while on trauma call. A system must be developed to assure early notification of the on-call to any other hospital while on trauma call. A system must be developed to assure notification of the on-call surgeon and compliance with these criteria and their appropriateness must be documented and monitored by the PI process.

2 Anesthesia must be promptly available with a mechanism established to ensure early notification of the on-call anesthesiologist. Anesthesia must be in-house and available 24 hours/day. Anesthesia chief residents or Certified Nurse Anesthetist (CRNAs) may fill this requirement. When residents or CRNAs are utilized, the staff anesthesiologist on-call will be advised, promptly available, and present for all operations. Hospital policy must be established to determine when the anesthesiologist must be immediately available for airway control and assisting with resuscitation. The availability of the anesthesiologist and the absence of delays in airway control or operative anesthesia must be documented and monitored by the PI process.

3 The neurosurgeons on the trauma team must be board certified, maintain 48 hours of trauma CME over 3 years and it is desirable maintain current ATLS certification. In Mississippi, a mechanism may be established to "grandfather" non-board certified neurosurgeons as determined by hospital policy. Achieving the standard for ATLS may take up to 5 years due to availability of ATLS courses in the State. The neurosurgeon liaison to the trauma service must attend 50% of the peer review committees annually and participate in the Multidisciplinary Trauma Committee. It is desirable to have the neurosurgeon dedicated to the trauma center solely while on-call or a back up schedule should be available.

- Obstetrics/Gynecologic Surgery
- Ophthalmic Surgery
- Oral/Maxillofacial
- Orthopedic Surgery[4]
- Pediatrics
- Plastic Surgery
- Pulmonary Medicine
- Radiology
- Thoracic Surgery

Recognizing that early rehabilitation is imperative for the trauma patient, a physical medicine and rehabilitation specialist must be available for the trauma program.

A trauma surgeon is presumed to be qualified and have privileges to provide emergency thoracic surgical care to patients with thoracic injuries. If this is not the case, the facility should have a board-certified thoracic surgeon immediately available.

Polices and procedures should exist to notify the patient's primary physician of the patient's condition.

B. Qualifications of Physicians on the Trauma Team

Basic to qualification for trauma care for any surgeon is Board Certification in a surgical specialty recognized by the American Board of Medical Specialties, the Advisory Board for Osteopathic Specialties, the Royal College of Physicians and Surgeons of Canada, or other appropriate foreign board. Many boards require and a practice period. Such an individual may be included when recognition by major professional organizations has been received in their specialty. The board certification criteria apply to the general surgeons, orthopedic surgeons, and neurosurgeons.

The trauma director is responsible for determining each general surgeon's ability to participate on the trauma team.

Alternate criteria in lieu of board certification are as follows:

- A non-board certified general surgeon must have completed a surgical residency program.

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[4] The orthopedics surgeons on the trauma team must be board certified, maintain 48 hours of trauma related CME over 3 years and it is desirable to maintain current ATLS certification. In Mississippi, a mechanism may be established to "grandfather" non-board certified orthopedists as determined by hospital policy. Achieving the standard for ATLS may take three to five years due to availability to ATLS course in the state. The orthopedic liaison to the Trauma Service must attend 50% of the peer review committees annually and participate with the Multidisciplinary Trauma Committee. It is desirable to have the orthopedists dedicated to the trauma center solely while on-call or a back up schedule should be available.

- He/she must be licensed to practice medicine.
- Approved by the hospital's credentialing committee for surgical privileges.
- The surgeon must meet all criteria established by the trauma director to serve on the trauma team.
- The surgeons's experience in caring for the trauma patient must be tracked by the PI program.
- The trauma director must attest to the surgeons's experience and quality as part of the recurring granting of trauma team privileges.

III. FACILITY STANDARDS

A. Emergency Department

The facility must have an emergency department, division, service, or section staffed so trauma patients are assured immediate and appropriate initial care. The emergency physician must be in-house 24 hours/day and immediately available at all times. The emergency department medical director must meet the recommended requirements related to commitment, experience, continuing education, ongoing credentialing, and board certification in emergency medicine.

The director of the emergency department, along with the trauma director, will establish trauma-specific credentials that should exceed those that are required for general hospital privileges. Examples of credentialing requirements would include skill proficiency, training requirements, conference attendance, education requirements, ATLS verification and specialty board certification.

NOTE: ATLS requirement may take up to five years to obtain. After January 1, 2004, physicians must obtain ATLS within one year. **This ATLS verification must be recognized by the American Board of Medical Specialities. ATLS requirements is waived for Board Certified Emergency Medicine and Board Certified General Surgery Physicians.**

The emergency physicians who are members of the trauma team must maintain forty-eight hours of trauma related CME over 3 years. Over a three-year period, at least one-half (24 hours) should be obtained outside the physician's own institution. These physicians must maintain ATLS certification.

The emergency medicine physician will be responsible for activating the trauma team based predetermined response protocols. He will provide team leadership and care for the trauma patient until the arrival of the surgeon in the resuscitation area. The emergency department must have established standards and procedures to ensure immediate and appropriate care for the adult and pediatric

trauma patient. The emergency department medical director, or his/her designee, must act as a liaison and participate with the Multidisciplinary Trauma Committee and the trauma PI process.

Basic to qualification for any physician is board certification in a speciality recognized by the American Board of Medical Specialties, the Advisory Board of Osteopathic Specialties, the Royal College of Physicians and Surgeons of Canada, or other appropriate foreign board.

Alternate criteria in lieu of board certification are as follows:

- A non-board certified physician must have completed an approved residency program.
- He/she must be licensed to practice medicine.
- Approved for emergency medicine by the hospital's credentialing committee.
- The physician must meet all criteria established by the trauma director and emergency medical director to serve on the trauma team.
- The physician's experience in caring for the trauma patient must be tracked by the PI Program.
- The trauma director and emergency medicine director must attest to the physicians' experience and quality as part of the recurring granting of trauma team privileges.
- Must have at least 12 months experience caring for the trauma patient tracked by the PI program.

There should be an adequate number of RN's staffing the trauma resuscitation area in-house 24 hours/day. Emergency nurses staffing the trauma resuscitation area should have special expertise in trauma care and participate in the ongoing PI process of the trauma program. There must be a written plan ensuring nurses maintain ongoing trauma specific education.

There is a complete list of required equipment necessary for the ED can be found in Appendix C of this document.

B. Surgical Suites/Anesthesia

The operating room (OR) must be staffed and available in-house 24 hours/day. OR nurses should participate in the care of the trauma patient and be competent in the surgical stabilization of the major trauma patient. Surgical nurses are an

integral member of the trauma team, and must participate in the ongoing PI process of the trauma program and be represented on the Multidisciplinary Trauma Committee.

The OR supervisor must be able to demonstrate a prioritization scheme to assure the availability of an operating room for the emergent trauma during a busy operative schedule. There must be an on-call system for additional personnel for multiple patient admissions.

There is a complete list of required equipment necessary for Surgery can be found in Appendix C of this document.

The anesthesia department in a Level I trauma center should be ideally organized and run by an anesthesiologist who is highly experienced and devoted to the care of the injured patient. If this is not the director, an anesthesiology liaison with the same qualifications should be identified. Anesthesiologist on the trauma team must have successfully completed an anesthesia residency program approved by the Accreditation Council for Graduate Medical Education, the American Board of Osteopathic Specialties and have board certification in anesthesia. One anesthesiologist should maintain commitment to education in trauma related anesthesia.

Anesthesia must be available in-house 24 hours/day with a mechanism established to ensure early notification of the on-call anesthesiologist. Anesthesia requirements may be fulfilled by anesthesia chief residents or Certified Registered Nurse Anesthetist (CRNAs) who are capable of assessing emergent situations in trauma patients and of providing indicated treatment, including initiation of surgical anesthesia. When the CRNA or chief resident is used to meet this requirement, the staff Anesthesiologist will be advised and promptly available at all times and present for operations. Trauma centers must document conditions when the anesthesiologist must be immediately available for airway emergencies and operative management of the trauma patient. The availability of the anesthesiologist and the absence of delays in operative anesthesia must be documented and monitored by the PI process. The anesthesiologist participating on the trauma team must participate in the Multidisciplinary Trauma Committee and the trauma PI process.

C. Post Anesthesia Care Unit (PACU)

Level I trauma centers must have a PACU staffed 24 hours/day and available to the postoperative trauma patient. Frequently it is advantageous to bypass the PACU and directly admit to the ICU. In this instance, the ICU may meet these requirements.

There must be a written plan ensuring nurses maintain ongoing trauma specific education.

PACU staffing should be in sufficient numbers to meet the critical needs of the trauma patient. A complete list of required equipment necessary for the PACU can be found in Appendix C of this document.

D. Intensive Care Unit

Level I trauma centers must have an Intensive Care Unit (ICU) that meets the needs of the adult trauma patient.

1. Surgical Director

The surgical director for the ICU must have obtained critical care training during residency or fellowship. This is best demonstrated by a certificate of added qualification in surgical critical care from the American Board of Surgery and may also be fulfilled by documentation of active participation during the preceding 12 months in trauma patients' ICU care and ICU administration and critical care-related continuing medical education. The director is responsible for the quality of care and administration of the ICU and will set policy and establish standards of care to meet the unique needs of the trauma patient.

2. Physician Coverage

The trauma service assumes and maintains responsibility for the care of the multiple injured patient. A surgically directed ICU physician team is essential. The team will provide in-house physician coverage for all ICU trauma patients at all times. This service can be staffed by appropriately trained physicians from different specialties, but must be led by a qualified surgeon as determined by critical care credentials consistent with the medical staff privileging process of the institution.

There must be in-house physician coverage for the ICU at all times. A physician credentialed by the facility for critical care should be promptly available to the trauma patient in the ICU 24 hours/day. This coverage is for emergencies only and is not intended to replace the primary surgeon but rather is intended to ensure that the patient's immediate needs are met while the surgeon is contacted.

The trauma service should maintain the responsibility for the care of the patient as long as the patient remains critically ill. The trauma service must remain in charge of the patient and coordinate all therapeutic decisions. The responsible trauma surgeon or designee should write all orders. The trauma surgeon should maintain control over all aspects of care, including but not limited to respiratory care and management of mechanical ventilation; placement and use of pulmonary catheters; management of fluid and electrolytes, antimicrobials, and enteral and parenteral nutrition.

3. Nursing Personnel

Level I trauma centers must provide staffing in sufficient numbers to meet the critical needs of the trauma patient. There must be a written plan ensuring nurses maintain ongoing trauma specific education. ICU nurses are integral part of the trauma team and as such, should be represented on the Multidisciplinary Trauma Committee and participate in the PI process of the trauma program.

There is a complete list of necessary equipment for the ICU in Appendix C of this document.

IV. CLINICAL SUPPORT SERVICES

A. Respiratory Therapy Service: The service should be staffed with qualified personnel in-house 24 hours/day to provide the necessary treatment for the injured patient.

B. Radiological Service: A radiological service must have a certified radiological technician in-house 24 hours/day and immediately available at all times for general radiological procedures. A technician must be in-house and immediately available for computerized tomography (CT) for both head and body. Specialty procedures such as angiography and sonography may be covered with a technician on-call. Sonography must be available to the trauma team. If the technician is not in-house 24 hours/day for special procedures the performance improvement process must document and monitor that the procedure is promptly available.

A board-certified radiologist should administer the department and participate actively in the trauma education and PI process. A staff radiologist must be promptly available, when requested, for the interpretation of radiographs, performance of complex imaging studies or interventional procedures. The radiologist must insure the preliminary interpretations are promptly reported to the trauma team and the PI program must monitor all changes in interpretation.

Written policy should exist delineating the prioritization/availability of the CT scanner for trauma patients. The PI process must ensure that trauma patients are accompanied by appropriately trained licensed providers and that the appropriate resuscitation and monitoring are provided during transportation to and while in the radiology department.

C. Clinical Laboratory Service: A clinical laboratory service must have the following services available in-house 24 hours/day:

1. Access to a blood bank and adequate storage facilities. Sufficient quantities of blood and blood products must be maintained at all times. Blood typing and cross-match capabilities must be readily available.

2. Standard analysis of blood, urine and other body fluids including microsampling when appropriate.

3. Blood gas and PH determinations (this function may be performed by services other than the clinical laboratory service, when applicable.)

4. Alcohol screening is required and drug screening is highly recommended.

5. Coagulation studies.

D. Burn Care: There must be a written transfer agreement to a Burn Center if this service is unavailable at the Level I trauma center. Policies and procedures should be in place to assure the appropriate care is rendered during the initial resuscitation and transfer of the patient.

E. Rehabilitation/Social Services: The rehabilitation of the trauma patient and the continued support of the family members are an important part of the trauma system. Each facility will be required to address a plan for integration of rehabilitation into the acute and primary care of the trauma patient, at the earliest stage possible after admission to the trauma center. Hospitals will be required to identify a mechanism to initiate rehabilitation services and/or consultation in a timely manner as well as policies regarding coordination of the Multidisciplinary Rehabilitation Team. Policies must be in place to address the coordination of transfers between acute care facilities and rehabilitation facilities licensed by the State of Mississippi with designated rehabilitation beds. Transfer agreements should include a feedback mechanism for the acute care facilities to update the health care team on the patient's progress and outcome for inclusion in the trauma registry. The rehabilitation services should minimally include; Occupational Therapy, Physical Therapy, and Speech Pathology.

The nature of traumatic injury requires that the psychological needs of the patient and family are considered and addressed in the acute stages of injury and throughout the continuum of recovery. Adequate number of trained personnel should be readily available to the trauma patients and family. Programs should be available to meet the unique need of the trauma patient.

F. Prevention/Public Outreach: Level I trauma centers will be responsible for taking a lead role in coordination of appropriate agencies, professional groups and hospitals in their region to develop a strategic plan for public awareness. This plan should take into consideration public awareness of the trauma system, access to the system, public support for the system, as well as specific prevention strategies. Prevention programs should be specific to the needs of the region. The trauma registry data should be utilized to identify injury trends and focus prevention needs.

Outreach is the act of providing resources to individuals and institutions that do not have the opportunities to maintain current knowledge and skills. Staff members at a Level I trauma center should provide consultation to staff members of other level facilities. For example: Advanced Trauma Life Support (ATLS), Pre Hospital Trauma Life Support (PHTLS), Trauma Nurse Curriculum Course (TNCC), Flight Nurse Advanced Trauma Course (FNATC) courses can be coordinated by the trauma center. Trauma physicians should provide a formal follow up to referring physicians about specific patients to educate the practitioner for the benefit of further injured patients.

G. Transfer Protocol: Level I trauma centers should work in collaboration with the referral trauma facilities in their region and develop interfacility transfer guidelines. These guidelines must address criteria to identify high-risk trauma patients that could benefit from a higher level of trauma care. All designated facilities will agree to provide services to the trauma victim regardless of his/her ability to pay.

Transfer protocols must be written for specialty referral centers such as pediatrics, burns or spinal cord injury when these services are not available to the trauma center. The transfer protocols should include a feedback loop so that the primary provider has a good understanding of the patient outcome. Every effort should be made to repatriate the trauma patient to his/her local community hospital or provider hospital if appropriate.

H. Performance Improvement/Evaluation: A key element in trauma system planning is evaluation. All trauma centers will be required to participate in the statewide trauma registry for the purpose of supporting peer review and performance improvement activities at the local, regional and state levels. Since these data relate to specific trauma patients and are used to evaluate and improve the quality of health care services, this data is confidential as provided in Mississippi Annotated Code §41-59-77. Level I trauma facilities may be responsible for direct assistance to all other levels of referring facilities in providing data for inclusion in the registry.

Each trauma center must develop an internal trauma specific Performance Improvement (PI) plan that minimally addresses the following key components and is fully integrated into the hospital wide program:

- An organizational structure that facilitates performance improvement (Multidisciplinary Trauma Committee).
- Clearly defined authority and accountability for the program.
- Clearly stated goals and objectives one of which should be reduction of inappropriate variations in care.
- Development of expectations (criteria) from evidenced based

guidelines, pathways and protocols. These should be appropriate, objectively defined standards to determine quality of care.

- Explicit definitions of outcomes derived from institutional standards.
- Documentation system to monitor performance, corrective action and the result of the actions taken.
- A process to delineate credentialing of all trauma service physicians.
- An informed peer review process utilizing a multidisciplinary method.
- A method for comparing patient outcomes with computed survival probability.
- Autopsy information on all deaths when available.
- Review of prehospital care.
- Review of times and reasons for trauma bypass.
- Review of times and reasons for trauma transfers.

Representatives from the Level I trauma center shall participate in the Regional Trauma Advisory Committees and the statewide performance improvement process.

I. Education: Level I trauma centers must have medical education programs including educational training in trauma for physicians, nurses and prehospital providers. The Level I trauma centers should take a leadership role in providing educational activities. Education can be accomplished via many mechanisms (i.e. classic CME, preceptorships, fellowships, clinical rotations, telecommunications or providing locum tenens etc). The Level I trauma center is expected to support a surgical residency program. Additionally there should be a senior resident rotation in at least one of the following disciplines: emergency medicine, general surgery, orthopedic surgery**,** neurosurgery or support a trauma fellowship consistent with the educational requirements of the American Association for the Surgery of Trauma (AAST). The Level I should provide ATLS courses for the region.

J. Research: A trauma research program should be designed to produce new knowledge applicable to the care of the injured patient. The research may be conducted in a number of ways including traditional laboratory and clinical research, reviews of clinical series, and epidemiological or other studies. Publication of articles in peer-review journals as well as presentations of results

at local, regional and national meetings and ongoing studies approved by human and animal research review boards are expected from productive programs. The program should have an organized structure that fosters and monitors ongoing productivity.

The research program should be balanced to reflect a number of different interests. There must be a research committee, and identifiable Institutional Review Board process, active research protocols, surgeons involved in extramural educational presentations and adequate number of peer reviewed scientific publications. Publications should appear in peer-reviewed journals. In a three-year cycle, the suggested minimum activity of ten publications (per review cycle) from the physicians representing any of the four following specialties: emergency medicine, general surgery, orthopedic surgery, and neurosurgery.

XII. Level II Trauma Centers

A Level II trauma center is an acute care facility with the commitment, resources and specialty training necessary to provide sophisticated trauma care.

I. HOSPITAL ORGANIZATION

A. Trauma Program

There must be a written commitment on behalf of the entire facility to the organization of trauma care. The trauma program must be established and recognized by the medical staff and hospital administration. The trauma program must come under the direction of a board-certified surgeon with special interest in trauma care. An identified hospital administrative leader must work closely with the trauma medical director to establish and maintain the components of the trauma program including appropriate financial support. The trauma program location in the organizational structure of the hospital must be placed so that it may interact effectively with at least equal authority with departments providing patient care. An administrative structure should minimally include an administrator, medical director, trauma program manager (TPM), trauma registrar and the appropriate support staff. Administrative support includes human resources, educational activities, community outreach activities, and research. The trauma program must be multidisciplinary in nature and the performance improvement evaluation of this care should extend to all the involved departments.

B. Trauma Service

The trauma service should be established and recognized by the medical staff and be responsible for the overall coordination and management of the system of care rendered to the injured patient. The trauma service will vary in each organization depending on the needs of the patient and the resources available. The trauma service must come under the organization and direction of a surgeon who is board certified (usually general surgery) with special interest in trauma care. All patients with multiple system trauma or major injury must be evaluated by the trauma service. The surgeon responsible for the overall care of the patient must be identified.

C. Trauma Team

The team approach is optimal in the care of the multiple injured patient. Policies should be in place describing the respective role of all personnel on the trauma team. The composition of the trauma team in any hospital will depend on the characteristics of that hospital and it's staff. In some instances a tiered response may be appropriate. If a tiered response is employed written policy must be in place and the system monitored by the PI process. The team leader must be a

qualified general surgeon. All physicians on the trauma team responsible for directing the initial resuscitation of the trauma patients must be currently certified in The American College of Surgeons Advanced Trauma Life Support (ATLS). Suggested composition of the trauma team for a severely injured patient may include:

- Anesthesiologist
- Emergency Physicians
- Laboratory Technicians
- Mental Health/Social Services/ Pastoral Care
- Nurses: ED, OR, ICU, etc.
- Security Officers
- Pediatricians
- Physician Specialist as dictated by clinical needs
- Radiology Technicians
- Respiratory Therapists
- General/Trauma Surgeon

D. Medical Director

The trauma program medical director plays an important administrative role. The medical director must be a board-certified surgeon with special interest in trauma care. The medical director will be responsible for developing a performance improvement process and will have overall accountability and administrative authority for the trauma program. The medical director must be given administrative support to implement the requirements specified by the State trauma plan. The director is responsible for working with the credentialing process of the hospital, and, in consultation with the appropriate service chiefs, recommending appointment and removal of physicians from the trauma team. He should cooperate with nursing administration to support the nursing needs of the trauma patient and develop treatment protocols for the trauma patients. The director in collaboration with the trauma program manager/TPM should coordinate the budgetary process for the trauma program. The director must be currently certified in Advanced Trauma Life Support (ATLS), maintain personal involvement in care of the injured, maintain education in trauma care, and maintain involvement in professional organizations. The trauma director must be actively involved with the trauma system development at the community, regional and state level.

NOTE: ATLS requirement may take up to five years to obtain. After January 1, 2004, physicians must obtain ATLS within one year. **This ATLS verification must be recognized by the American Board of Medical Specialities. ATLS requirements is waived for Board Certified Emergency Medicine and Board Certified General Surgery Physicians.**

E. Multidisciplinary Trauma Committee

Each trauma center may choose to have one or more committee to accomplish the

tasks necessary. One committee should be multidisciplinary and focus on program oversight and leadership. The major focus will be on PI activities, policy development, communication among all team members, establishment of standards of care, education and outreach programs, and injury prevention. The committee oversees implementation of all program related services, meets regularly, takes attendance, maintains minutes and works to correct overall program deficiencies to optimize patient care. Suggested membership for the committee includes representatives from:

- Administration
- Anesthesia
- Emergency Department
- General Surgery
- Intensive Care
- Laboratory
- Neurosurgery
- Nursing
- Operating Room
- Orthopedics
- Pediatrics
- Prehospital Care Providers
- Radiology
- Rehabilitation
- Respiratory Therapy
- Trauma Program Manager/TPM

The clinical managers (or designees) of the departments involved with trauma care should play an active role with the committee.

The trauma center may wish to accomplish performance improvement activities at this same committee or develop a separate peer review committee. This committee should handle peer review independent from department based review. This committee must be multidisciplinary, meet regularly, maintain attendance and minutes. This committee must relate to the overall hospital performance improvement program.

F. Trauma Program Manager/TPM

Level II trauma centers must have a registered nurse working in the role of Trauma Program Manager. Working in conjunction with the medical director, the Trauma Program Manager is responsible for organization of the program and all systems necessary for the multidisciplinary approach throughout the continuum of trauma care. The Trauma Program Manager is responsible for working with the trauma team to assure optimal patient care. There are many requirements for data coordination and performance improvement, education and prevention activities incumbent upon this position. The Trauma Program Manager/TPM or his/her designee should offer or coordinate services for trauma education. The Trauma Program Manager will liaison with local EMS personnel, the Department, Trauma Regional Advisory Committee and other trauma centers.

G. Hospital Departments/Divisions/Sections

The Level II trauma center must have the following departments, divisions, or sections:

General Surgery, Neurological Surgery, Orthopedic Surgery, Emergency Medicine and Anesthesia.

II. CLINICAL COMPONENTS

A. Level II trauma centers must maintain published call schedules and have the following specialist immediately available 24 hours/day:

- Emergency Medicine (In-house 24 hours/day)
- Trauma/General Surgery[4]
- Anesthesia[5]

The following specialist should be on-call and promptly available 24 hours/day:

- Critical Care Medicine
- Hand Surgery
- Microvascular Surgery
- Neurologic Surgery[6]
- Obstetrics/Gynecologic Surgery
- Ophthalmic Surgery

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4 The trauma surgeon on-call must be unencumbered and immediately available to respond to the trauma patient. The 24-hour in-house availability of the attending surgeon is the most direct method for providing this involvement. Local conditions may allow the surgeon to be rapidly available on short notice. Under these circumstances the general surgeon is expected to be in the emergency department upon arrival of the seriously injured patient. hospital policy must be established to define conditions requiring the trauma surgeon's presence with the clear requirement on the part of the hospital and surgeon that the surgeon will participate in the early care of the patient. The trauma surgeon's participation in major therapeutic decisions, presence in the emergency department for major resuscitation and presence at operative procedures is mandatory. There must be a back-up surgeon schedule published. It is desirable that the surgeon on-call be dedicated to the trauma center and not on-call to any other hospital while on trauma call. The back-up surgeon on-call must be dedicated to the trauma center and not on-call to any other hospital while on back-up call**.** A mechanism must be established to ensure notification of the back-up surgeon when the primary surgeon is not available to the trauma center. A system must be developed to assure notification of the on-call surgeon and compliance with these criteria and their appropriateness must be documented and monitored by the PI process.

5 Anesthesia must be promptly available with a mechanism established to ensure notification of the on-call anesthesiologist. When residents or CRNAs are utilized, the staff anesthesiologist on-call will be advised, promptly available, and present for all operations.

6 The neurosurgeons on the trauma team must be board certified, maintain 48 hours of trauma related CME over 3 years and it is desirable to maintain current ATLS certification. In Mississippi, a mechanism may be established to "grandfather" non-board certified neurosurgeons as determined by hospital policy. The neurosurgeon liaison to the Trauma Service must attend 50% of the peer review committees annually and participate with the Multidisciplinary Trauma Committee. It is desirable to have the neurosurgeon dedicated to the trauma center solely while on-call or a back up schedule should be available.

- Oral/Maxillofacial
- Orthopedic Surgery[7]
- Plastic Surgery
- Radiology
- Thoracic Surgery

Recognizing that early rehabilitation is imperative for trauma patients, a physical medicine and rehabilitation specialist should be available for the trauma program.

A trauma surgeon is presumed to be qualified and have privileges to provide emergency thoracic surgical care to patients with thoracic injuries. If this is not the case, the facility should have a board certified thoracic surgeon immediately available.

Policies and procedures should exist to notify the patient's primary physician of the patient's condition at an appropriate time.

B. Qualifications of Physicians on the Trauma Team

Basic to qualification for trauma care for any surgeon is Board Certification in a surgical specialty recognized by the American Board of Medical Specialties, the Advisory Board for Osteopathic Specialties, the American Dental Association, the Royal College of Physicians and Surgeons of Canada or other appropriate foreign board.

Alternate criteria in lieu of board certification are as follows:

- A Non-board certified general surgeon must have completed a surgical residency program.
- He/she must be licensed to practice medicine.
- Approved by the hospital's credentialing committee for surgical privileges.
- The surgeon must meet all criteria established by the trauma director to serve on the trauma team.

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[7] The orthopedic surgeons on the trauma team must be board certified, maintain 48 hours of trauma related CME over 3 years and it is desirable to maintain current ATLS certification. In Mississippi, a mechanism may be established to "grandfather" non-board certified orthopedics as determined by hospital policy. The orthopedics liaison to the Trauma Service must attend 50% of the peer review committees annually and participate with the Multidisciplinary Trauma Committee. It is desirable to have the orthopedics dedicated to the trauma center solely while on-call or a back up schedule should be available.

- The surgeon's experience in caring for the trauma patient must be tracked by the PI program.

- The trauma director must attest to the surgeon's experience and quality as part of the recurring granting of trauma team privileges.

The trauma director using the trauma PI program is responsible for determining each general surgeon's ability to participate on the trauma team.

III. FACILITY STANDARDS

A. Emergency Department

The facility must have an emergency department, division, service, or section staffed so trauma patients are assured immediate and appropriate initial care. The emergency physician must be in-house 24 hours/day and immediately available at all times. The emergency department medical director must meet the recommended requirements related to commitment, experience, continuing education, ongoing credentialing, and board certification in emergency medicine.

The director of the emergency department, along with the trauma director, will establish trauma-specific credentials that could exceed those that are required for general hospital privileges. Examples of credentialing requirements would include skill proficiency, training requirements, conference attendance, education requirements, ATLS verification and specialty board certification.

The emergency physicians who are members of the trauma team must maintain 48 hours of trauma related CME over 3 years. Over a three-year period, at least one half (24 hours) should be obtained outside the physicians own institution. These physicians must maintain a current ATLS certification.

NOTE: ATLS requirement may take up to five years to obtain. After January 1, 2004, physicians must obtain ATLS within one year. **This ATLS verification must be recognized by the American Board of Medical Specialities. ATLS requirements is waived for Board Certified Emergency Medicine and Board Certified General Surgery Physicians.**

The emergency medicine physician will be responsible for activating the trauma team based on predetermined response protocols. He will provide team leadership and care for the trauma patient until the arrival of the surgeon in the resuscitation area. The emergency department must have established standards and procedures to ensure immediate and appropriate care for the adult and pediatric trauma patient. The emergency department medical director, or his/her designee, must act as a liaison and participate with the Multidisciplinary Trauma Committee and the trauma PI process.

Basic to qualification for trauma care for any physician is board certification in a

specialty recognized by the American Board of Medical Specialties, the Advisory Board for Osteopathic Specialties, the Royal College of Physicians and Surgeons of Canada, or other appropriate foreign board.

Alternate criteria in lieu of board certification are as follows:

- A non-board certified physician must have completed an approved residency program.
- He/she must be licensed to practice medicine.
- Approved for emergency medicine by the hospital's credentialing committee.
- The physician must meet all criteria established by the trauma director and emergency medical director to serve on the trauma team.
- The physician's experience in caring for the trauma patient must be tracked by the PI program.
- The trauma director and emergency medicine director must attest to the physicians' experience and quality as part of the recurring granting of trauma team privileges.
- Must have at least 12 months experience caring for the trauma patient tracked by the PI program.

There should be an adequate number of RN's staffed for the trauma resuscitation area in-house 24 hours/day. Emergency nurses staffing the trauma resuscitation area should have special expertise in trauma care and participate in the ongoing PI process of the trauma program. There must be a written plan ensuring nurses maintain ongoing trauma specific education.

There is a complete list of required equipment necessary for the ED found in Appendix C of this document.

B. Surgical Suites/Anesthesia

It is recommended that the OR be staffed and available in-house 24 hours/day. If the staff is not in-house, Hospital policy must be written to assure notification and prompt response. The PI process must document and monitor the ongoing availability of OR crews and absence of delay.

The OR nurses should participate in the care of the trauma patient and be competent in the surgical stabilization of the major trauma patient.

The surgical nurses are an integral member of the trauma team and must

participate in the ongoing PI process of the trauma program and must be represented on the Multidisciplinary Trauma Committee.

The OR supervisor must be able to demonstrate a prioritization scheme to assure the availability of an operating room for the emergent trauma patient during a busy operative schedule. There must be an on-call system for additional personnel for multiple patient admissions.

A complete list of required equipment necessary for the Surgery can be found in Appendix C of this document.

The anesthesia department in a Level II trauma center should be ideally organized and run by an anesthesiologist who is experienced and devoted to the care of the injured patient. If this is not, the director, an anesthesiologist liaison with the same qualifications should be identified. Anesthesiologists on the trauma team must have successfully completed an anesthesia residency program approved by the Accreditation Council for Graduate Medical Education, the American Board of Osteopathic Specialties, or the American Osteopathic Board and should have board certification in anesthesia.

Anesthesia must be available 24 hours/day with a mechanism established to ensure notification of the on-call anesthesiologist. Anesthesia requirements may be fulfilled by anesthesia chief residents or Certified Registered Nurse Anesthetists (CRNAs) who are capable of assessing emergent situations in trauma patients and of providing an indicated treatment, including initiation of surgical anesthesia. When the CRNA or chief resident is used to meet this requirement, the staff Anesthesiologist will be advised and promptly available at all times and present for operations. Trauma centers must document conditions when the anesthesiologist must be immediately available for airway emergencies and operative management of the trauma patient. The availability of the anesthesiologist and the absence of delays in operative anesthesia must be documented and monitored by the PI process. The anesthesiologist participating on the trauma team should have the necessary educational background in the care of the trauma patient, participate in the Multidisciplinary Trauma Committee and the trauma PI process.

C. Post Anesthesia Care Unit (PACU)

It is desirable to have a PACU staffed 24 hours/day and available to the postoperative trauma patient. If the staff is not in-house, Hospital policy must be written to assure early notification and prompt response. The PI process must document and monitor the ongoing availability of OR crews and absence of delay. Frequently it is advantageous to bypass the PACU and directly admit to the ICU. In this instance, the ICU may meet these requirements.

PACU nurses must show evidence of completion of a structured in-service program. There must be a written plan ensuring nurses maintain ongoing trauma specific education.

PACU staffing should be in sufficient numbers to meet the critical needs of the trauma patient. A complete list of required equipment necessary for the PACU found in Appendix C of this document.

D. Intensive Care Unit

Level II trauma centers must have an Intensive Care Unit (ICU) that meets the needs of the adult trauma patient.

1. Surgical Director

Ideally, the surgical director for the ICU, which houses the trauma patients, will have obtained critical care training during residency or fellowship and must have expertise in the preoperative and post injury care of the injured patient. A certificate of added qualification in surgical critical care from the American Board of Surgery best demonstrates this. Alternatively this criteria may be achieved by documentation of active participation during the preceding 12 months in trauma patients' ICU care and ICU administration and critical care-related continuing medical education and trauma related PI activities. The director is responsible for the quality of care and administration of the ICU and will set policy and establish standards of care to meet the unique needs of the trauma patient.

2. Physician Coverage

The trauma service assumes and maintains responsibility for the care of the multiple injured patient. The trauma service should maintain the responsibility for the care of the patient as long as the patient remains critically ill. The trauma service must remain in charge of the patient and coordinate all therapeutic decisions. The responsible trauma surgeon or designee should write all orders. The trauma surgeon should maintain control over all aspects of care, including but not limited to respiratory care and management of mechanical ventilation; placement and use of pulmonary catheters; management of fluid and electrolytes, antimicrobials, and enteral and parenteral nutrition.

There must be in-house physician coverage for the ICU at all times[8]. A physician credentialed by the facility for critical care should be promptly available to the trauma patient in the ICU 24 hours/day. This coverage is for emergencies only and is not intended to replace the primary surgeon but rather is intended to ensure that the patient's immediate needs are met while the surgeon is contacted

3. Nursing Personnel

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[8] This can be covered by the emergency physician or in house physician.

Level II trauma centers must provide staffing in sufficient numbers to meet the critical needs of the trauma patient. Critical care nurses must show evidence of completion of a structured in-service program. There must be a written plan ensuring nurses maintain ongoing critical care education. ICU nurses are an integral part of the trauma team and as such, should be represented on the Multidisciplinary Trauma Committee and participate in the PI process of the trauma program.

There is a complete list of necessary equipment for the ICU in Appendix C of this document.

IV. CLINICAL SUPPORT SERVICES

A. Respiratory Therapy Service: The service should be staffed with qualified personnel in-house or on-call 24 hours/day to provide the necessary treatments for the injured patient.

B. Radiological Service: A radiological service must have a certified radiological technician in-house 24 hours/day and immediately available at all times for general radiological procedures. It is desirable to have a technician in-house and immediately available for computerized tomography (CT) for both head and body. If the technician is not in-house 24 hours/day for special procedures the performance improvement process must document and monitor that the procedure is promptly available. Specialty procedures such as angiography and sonography may be covered with a technician on-call. Sonography must be available to the trauma team.

A board-certified radiologist should administer the department and participate actively in the trauma education and PI process. A staff radiologist must be promptly available, when requested, for the interpretation of radiographs, performance of complex imaging studies or interventional procedures. The radiologist must insure the preliminary interpretations are promptly reported to the trauma team and the PI program must monitor all changes in interpretation.

Written policy should exist delineating the prioritization/availability of the CT scanner for trauma patients. The PI process must endure that trauma patients are accompanied by appropriately trained licensed providers and that the appropriate resuscitation and monitoring are provided during transportation to and while in the radiology department.

C. Clinical Laboratory Service: A clinical laboratory service must have the following services available in-house 24 hours/day:

1. Access to a community central blood bank and adequate storage facilities. Sufficient quantities of blood and blood products should be maintained at all times. Blood typing and cross-match capabilities must be readily available.

2. Standard analysis of blood, urine, and other body fluids including microsampling when appropriate.

3. Blood gas and pH determinations (this function may be performed by services other than the clinical laboratory service, when applicable).

4. Alcohol screening is required and drug screening is highly recommended.

5. Coagulation studies

D. Burn Care: There must be a written transfer agreement to a Burn Center. Policies and procedures should be in place to assure the appropriate care is rendered during the initial resuscitation and transfer of the patient.

E. Rehabilitation/Social Services: The rehabilitation of the trauma patient and the continued support of the family members are an important part of the trauma system. Each facility will be required to address a plan for integration of rehabilitation into the acute and primary care of the trauma patient, at the earliest stage possible after admission to the trauma center. Hospitals will be required to identify a mechanism to initiate rehabilitation services and/or consultation in a timely manner as well as policies regarding coordination of the Multidisciplinary Rehabilitation Team. Policies must be in place to address the coordination of transfers between acute care facilities and rehabilitation facilities licensed by the State of Mississippi with designated rehabilitation beds. Transfer agreements should include a feedback mechanism for the acute care facilities to update the health care team on the patient's progress and outcome for inclusion in the trauma registry. The rehabilitation services should minimally include Occupational Therapy, Physical Therapy, and Speech Pathology.

The nature of traumatic injury requires that the psychological needs of the patient and family are considered and addressed in the acute stages of injury and throughout the continuum of recovery. Adequate numbers of trained personnel should be readily available to the trauma patients and family. Programs should be available to meet the unique needs of the trauma patient.

F. Prevention/Public Outreach: Level II trauma centers will be responsible for participating with appropriate agencies, professional groups and hospitals in their region to develop a strategic plan for public awareness. This plan should take into consideration public awareness of the trauma system, access to the system, public support for the system, as well as specific prevention strategies. Prevention programs should be specific to the needs of the region. The trauma registry data should be utilized to identify injury trends and focus prevention needs.

Outreach is the act of providing resources to individuals and institutions that do not have the opportunities to maintain current knowledge and skills. Staff members at

the Level II trauma center should provide consultation to staff members at other facilities in the region. Advanced Trauma Life Support (ATLS), Pre Hospital Trauma Life Support (PHTLS), Trauma Nurse Curriculum Course (TNCC), Flight Nurse Advanced Trauma Course (FNATC) courses for example can be coordinated by the trauma center. Trauma physicians should provide a formal follow up to referring physicians about specific patients to educate he practitioner for the benefit of further injured patients.

G. Transfer Protocol: Level II trauma centers should work in collaboration with the referral trauma facilities in their region and develop interfacility transfer guidelines. These guidelines must address criteria to identify high-risk trauma patients that could benefit from a higher level of trauma care. All designated facilities will agree to provide services to the trauma victim regardless of his/her ability to pay.

Transfer protocols must be written for specialty referral centers such as pediatrics, burn or spinal cord injury when these services are not available at the trauma center. The transfer protocols must include a feedback loop so that the primary provider has a good understanding of the patient outcome. Every effort should be made to repatriate the trauma patient to his/her local community hospital or provider hospital if appropriate.

H. Performance Improvement/Evaluation: A key element in trauma system planning is evaluation. All trauma centers will be required to participate in the statewide trauma registry for the purpose of supporting peer review and performance improvement activities at the local, regional and state levels. Since these data relate to specific trauma patients and are used to evaluate and improve the quality of health care services, this data is confidential and will be governed by the Mississippi Code Section of Trauma Bill 41-59-77. Level I, II and III trauma facilities will be responsible for direct assistance to Level IV. Referring facilities in providing data for inclusion in the registry.

Each trauma center must develop an internal Performance Improvement plan that minimally addresses the following key components and is fully integrated into the hospital wide program:

1. An organizational structure that facilitates performance improvement (Multidisciplinary Trauma Committee).

2. Clearly defined authority and accountability for the program.

3. Clearly stated goals and objectives one of which should be reduction of inappropriate variations in care.

4. Development of expectations (criteria) from evidenced based guidelines, pathways and protocols. These should be appropriate, objectively defined standards to determine quality of care.

5. Explicit definitions of outcomes derived from institutional standards

6. Documentation system to monitor performance, corrective action and the result of the actions taken.

7. A process to delineate privileges credentialing all trauma service physicians.

8. An informed peer review process utilizing a multidisciplinary method.

9. A method for comparing patient outcomes with computed survival probability.

10. Autopsy information on all deaths when available.

11. Medical nursing audits.

12. Review of prehospital care.

13. Review of times and reasons for trauma bypass.

14. Review of times and reasons for trauma transfers.

Representatives from the Level II trauma center shall participate in the Regional Trauma Advisory Councils and the statewide performance improvement process.

I. Education: Level II trauma centers must have medical education programs including educational training in trauma for physicians, nurses and prehospital providers. The Level II trauma centers assist and cooperate with the Level I trauma center in providing educational activities. Education may be accomplished via many mechanisms (i.e. classic CME, preceptorships, fellowships, clinical rotations, telecommunications or providing locum tenens, etc.)

XIII. Level III Trauma Centers

It is important to incorporate all facilities in trauma planning. A Level III trauma center is an acute care facility with the commitment, medical staff, personnel and specialty training necessary to provide initial resuscitation of the trauma patient. Generally, a Level III trauma center is expected to provide initial resuscitation of the trauma patient and immediate operative intervention to control hemorrhage and to assure maximal stabilization prior to referral to a higher level of care. In many instances, patients will remain in the Level III trauma center unless the medical needs of the patient require secondary transfer. The decision to transfer a patient rests with the physician attending the trauma patient. All Level III trauma centers will work collaboratively with other trauma facilities to develop transfer protocols and a well-defined transfer sequence.

I. HOSPITAL ORGANIZATION

A. Trauma Program

There must be a written commitment on behalf of the entire facility to the organization of trauma care. The trauma program must be established and recognized by the medical staff and hospital administration. The trauma program must come under the direction of a board-certified surgeon. An identified hospital administrative leader should work closely with the trauma medical director to establish and maintain the components of the trauma program. The trauma program location in the organizational structure of the hospital should be placed so that it may interact effectively with at least equal authority with other departments providing patient care. The trauma program should be multidisciplinary in nature and the performance improvement evaluation of this care must extend to all the involved departments.

B. Trauma Service

A trauma service is an organized structure of care for the patient. The service includes personnel and resources necessary to ensure the appropriate efficient care delivery. The composition of the service will vary depending on the nature of the medical center, available resources and personnel and patient clinical need. The trauma service must come under the organization and direction of a surgeon who is board certified with special interest in trauma care. All patients with multiple system trauma or major injury must be evaluated by the trauma service. Injured patients may be admitted to individual surgeons.

C. Trauma Team

The team approach is optimal in the care of the multiple injured patient. Policies should be in place describing the roles of all personnel on the trauma team. The composition of the trauma team in any hospital will depend on the characteristics of that hospital and its resources. All physicians on the trauma team responsible for directing any phase of the resuscitation (emergency physician and general

surgeons) must be currently certified in ATLS.

Suggested composition of the trauma team for severely injured patients may include:

- Physicians
- Specialists
- Laboratory Technicians
- Nursing
- Auxiliary Support Staff

D. Medical Director

The trauma program medical director is the surgeon who leads the multidisciplinary activities of the trauma program. The director must be a board-certified surgeon . The medical director will be responsible for developing a performance improvement process and, through this process, will have overall accountability for all trauma patients and administrative authority for the hospital's trauma program. The director is responsible for working with the credentialing process of the hospital and, in consultation with the appropriate service chiefs, recommending appointment and removal of physicians from the trauma team. He should cooperate with nursing administration to support the nursing needs of the trauma patient and develop treatment protocols for the trauma patients. The director in collaboration with the Trauma Program Manager/TPM should coordinate the budgetary process for the trauma program.

The director must be currently certified by the American College of Surgeons Advanced Trauma Life Support (ATLS), maintain personal involvement in care of the injured, maintain education in trauma care, and maintain involvement in professional organizations. The trauma director, or his designee, must be actively involved with the trauma system development at the community, regional and state level.

NOTE: ATLS requirement may take up to five years to obtain. After January 1, 2004, physicians must obtain ATLS within one year. **This ATLS verification must be recognized by the American Board of Medical Specialities. ATLS requirements is waived for Board Certified Emergency Medicine and Board Certified General Surgery Physicians.**

E. Multidisciplinary Trauma Committee

The purpose of the committee is to provide oversight and leadership to the entire trauma program. The exact format will be hospital specific and may be accomplished by collaboration with another designated trauma center in the region. The major focus will be on PI activities, policy development, communication among all team members, development of standards of care, education and outreach programs, and injury prevention. The committee oversees the implementation of

the process which includes all program related services, meets regularly, takes attendance, maintains minutes and works to correct overall program deficiencies to optimize patient care. Suggested membership for the committee includes representatives (if available in the community) from:

- Administration
- Anesthesia
- Emergency Department
- General Surgery
- Intensive Care
- Laboratory
- Nursing
- Operating Room
- Orthopedics
- Pediatrics
- Prehospital Care Providers
- Radiology
- Rehabilitation
- Respiratory Therapy
- Trauma Program Manager/TPM

The clinical managers (or designees) of the departments involved with trauma care should play an active role with the committee**.**

F. Trauma Program Manager/TPM

Level III trauma centers must have a registered nurse working in the role of a Trauma Program Manager/TPM. Working in conjunction with the trauma director, the Trauma Program Manager is responsible for organization of the program and all systems necessary for the multidisciplinary approach throughout the continuum of trauma care. He/she is responsible for working with the trauma team to assure optimal patient care. The Trauma nurse coordinator will liaison with local EMS personnel, the RTAC and the Department as well as other trauma centers.

II. CLINICAL CAPABILITIES

Level III trauma centers must have published on-call schedules and have the following medical specialists immediately available 24 hours/day to the injured patient:

- Trauma/General Surgery[1]
- Anesthesia[2]

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1 The trauma surgeon on call must be promptly available to respond to the trauma patient. Hospital policy must be established to define conditions requiring the trauma surgeon's immediate availability. The trauma surgeon's participation in major therapeutic decisions, presence in the emergency department for major resuscitation, and presence at operative procedures is mandatory. A system must be developed to assure notification of the on-call surgeon and compliance with these criteria and their appropriateness must be documented and monitored by the PI process. It is desirable to have written guidelines for surgical backup capabilities. It is desirable to have the surgeon on-call dedicated to a single hospital when on-call.

2 Anesthesia must be promptly available with a mechanism to ensure notification of the on-call anesthesiologist. Local conditions must be established to determine when the anesthesiologist must be immediately available for airway emergencies and operative management. The availability of the anesthesiologist and the absence of delays in airway control or operative anesthesia must be documented and monitored by the PI process. Anesthesia coverage may be provided by a CRNA as long as a supervising physician is present in the operating suite during surgery. Hospital policy must be established to determine when the CRNA must be immediately available for airway emergencies and operative management. The availability of the CRNA and the absence of delays in airway control or operative anesthesia must be documented and monitored by the PI

- Emergency Medicine

The following specialist must be on-call and promptly available:

- Orthopedic Surgery
- Radiology

It is desirable (although not required) to have the following specialist available to a Level III trauma center:

- Hand Surgery
- Neurological Surgery
- Obstetrics/Gynecology Surgery
- Opthalmic Surgery
- Oral/Maxillofacial Surgery
- Plastic Surgery
- Critical Care Medicine
- Thoracic Surgery

The staff specialist on-call will be notified at the discretion of the trauma surgeon and will be promptly available. The PI program will continuously monitor this availability.

Policies and procedures should exist to notify the patient's primary physician of the patient's condition at an appropriate time.

A. Qualifications of Physicians on the Trauma Team

Basic to qualification for trauma care for any surgeon is Board Certification in a surgical specialty recognized by the American Board of Medical Specialties, the Advisory Board for Osteopathic Specialties, the American Dental Association, the Royal College of Physicians and Surgeons of Canada, or other appropriate foreign board.

Alternate criteria in lieu of board certification are as follows:

- Non-board certified general surgeon must have completed a surgical residency program.

- He/she must be licensed to practice medicine.

- Approved by the hospital's credentialing committee for surgical privileges.

- The surgeon must meet all criteria established by the trauma director

process.

to serve on the trauma team.

- The surgeon's experience in caring for the trauma patient must be tracked by the PI program.

- The trauma director must attest to the surgeons' experience and quality as part of the recurring granting of trauma team privileges.

The surgeon is expected to serve as the captain of the resuscitating team and is expected to be in the emergency department upon arrival of the seriously injured patient to make key decisions about the management of the trauma patient's care. The surgeon will coordinate all aspects of treatment, including resuscitation, operation, critical care, recuperation and rehabilitation (as appropriate in a Level III facility) and determine if the patient needs transport to a higher lever of care. If transport is required he/she is accountable for coordination of the process with the receiving physician at the receiving facility. If the patient is to be admitted to the Level III trauma center, the surgeon is the admitting physician and will coordinate the patient care while hospitalized. Guidelines should be written at the local level to determine which types of patients should be admitted to the Level III trauma center or which patients should be considered for transfer to a higher level of care.

The general surgeons and emergency physicians must participate in a multidisciplinary trauma committee and the PI process. Peer review committee attendance must be greater than fifty percent over a year's period of time. These physicians must be currently certified in ATLS, and it is desirable that they be involved in at least forty eight (48) hours of trauma related continuing education (CME) every 3 years.

NOTE: ATLS requirement may take up to five years to obtain. After January 1, 2004, physicians must obtain ATLS within one year. **This ATLS verification must be recognized by the American Board of Medical Specialities. ATLS requirements is waived for Board Certified Emergency Medicine and Board Certified General Surgery Physicians.**

For those physicians providing emergency medicine coverage, board certification in Emergency Medicine is desirable. However, career emergency medicine physicians who are board certified in a specialty recognized by the American Board of Medical Specialties, a Canadian Board or other equivalent foreign board meets the requirements.

Alternative criteria for the non-boarded physician working in the Emergency Department are as follows:

- He/she must be licensed to practice medicine

- Approved by the hospital's credentialing committee for emergency medicine privileges.

- The physician must meet all criteria established by the trauma and emergency medical director to serve on the trauma team.

- The physician's experience in caring for the trauma patient must be tracked by the PI program.

- The trauma and emergency medical director must attest to the physician's experience and quality as part of the recurring granting of trauma team privileges.

- Residency in Emergency Medicine is desirable.

III. FACILITY STANDARDS

A. Emergency Department

The facility must have an emergency department staffed so those trauma patients are assured immediate and appropriate initial care. The emergency physician must be in-house 24 hours/day, immediately available at all times, and capable of evaluating trauma patients and provide initial resuscitation. The emergency medicine physician will provide team leadership and care for the trauma patient until the arrival of the surgeon in the resuscitation area. The emergency department must have established standards and procedures to ensure immediate and appropriate care for the adult and pediatric trauma patient. The medical director for the department, or his designee, must participate with the Multidisciplinary Trauma Committee and the trauma PI process.

There should be an adequate number of RN's staffed for the trauma resuscitation area in-house 24 hours/day. There must be a written plan ensuring nurses maintain ongoing trauma specific education.

There is a complete list of required equipment necessary for the ED found in Appendix C of this document.

B. Surgical Suites

The surgical team must be on-call with a well-defined mechanism for notification to expedite transfer to the operating room if the patient's condition warrants. The process should be monitored by trauma PI program.

The surgical nurses are integral members of the trauma team and must participate in the ongoing PI process of the trauma program and must be represented on the Multidisciplinary Trauma Committee.

The OR supervisor must be able to demonstrate a prioritization scheme to assure the availability of an operating room for the emergent trauma patient during a busy

operative schedule.

Anesthesia must be promptly available with a mechanism established to ensure notification of the on-call anesthesiologist. The Level III trauma center must document conditions when the anesthesiologist must be immediately available for airway emergencies and operative management of the trauma patient. Anesthesia coverage may be provided by a CRNA under physician supervision. The availability of the anesthesiologist and the absence of delays in airway control or operative anesthesia must be documented and monitored by the PI process. The anesthesiologist/CRNA must participate in the Multidisciplinary Trauma Committee and the trauma PI process.

There is a complete list of necessary equipment for the surgical suites found in Appendix C of this document.

C. Post Anesthesia Care Unit (PACU)

A Level III trauma center should have a PACU available 24 hours/day to the postoperative trauma patient. Frequently, it is advantageous to bypass the PACU and directly admit to the ICU. In this instance, the ICU may meet these requirements.

There must be a written plan ensuring nurses maintain ongoing critical care education. PACU staffing should be in sufficient numbers to meet the critical need of the trauma patient.

There is a complete list of necessary equipment for the PACU in Appendix C of this document.

D. Intensive Care Unit

The ICU must have a surgical director or surgical co-director who is responsible to set policy and administration and establish standards of care to meet the unique needs of the trauma patient. He/she is responsible for the quality of care and administration of the ICU. The trauma medical director must work to assure trauma patients admitted to the ICU will be admitted under the care of a general surgeon or appropriate surgical subspecialists. In addition to overall responsibility for patient care by the primary surgeon, it is desirable to have in-house physician coverage for the ICU at all times. This may be provided by a hospitalist or emergency physician.

Level III trauma center should provide staffing in sufficient numbers to meet the needs of the trauma patient. There must be a written plan ensuring nurses maintain ongoing critical care education. ICU nurses are an integral part of the trauma team and as such, should be represented on the Multidisciplinary Trauma Committee and participate in the PI process of the trauma program.

There is a complete list of necessary equipment for the ICU in Appendix C of this document.

IV. CLINICAL SUPPORT SERVICES

A. Respiratory Therapy Service: The service should be staffed with qualified personnel on-call 24 hours/day to provide the necessary treatments for the injured patient.

B. Radiological Services: A board-certified radiologist should administer the department and participate actively in the trauma PI process. The radiologist is a key member of the trauma team and should be represented on the Multidisciplinary Trauma Committee. It is desirable that a certified radiological technician should be available 24 hours/day to meet the immediate needs of the trauma patient for general radiological procedures. Sonography should be available to the trauma team. If the radiology technician and the speciality technician are on-call from home, a mechanism must be in place to assure the technicians are available. The quality assurance process must verify that radiological services are promptly available. Written policy should exist delineating the prioritization/availability of the CT scanner for trauma patients. The use of teleradiology is acceptable. It is anticipated that facilities may cross-train personnel for other roles. This is acceptable as long as there is no response delay.

C. Clinical Laboratory Services: The clinical laboratory service shall have the following services available in-house 24 hours/day:

1. Access to a community central blood bank and adequate storage facilities. Sufficient quantities of blood and blood products should be maintained at all times. Blood typing and cross-match capabilities must be readily available.

2. Standard analysis of blood, urine, and other body fluids includes microsampling when appropriate.

3. Blood gas and Ph determinations (this function may be performed by services other than the clinical laboratory service, when applicable).

4. Alcohol screening is required and drug screening is highly recommended.

5. Coagulation studies.

Sufficient numbers of clinical laboratory technologists shall be in-house 24 hours/day and promptly available at all times. It is anticipated that facilities may cross-train personnel for other roles. This is acceptable as long as there is no response delay.

D. Acute Hemodialysis: There must be a written transfer agreement with a facility that provides this service if this service if it is not available at the Level III trauma center.

E. Burn Care: There must be a written transfer agreement to a Burn Center. Policies and procedures should be in place to assure the appropriate care is rendered during the initial resuscitation and transfer of the patient.

F. Rehabilitation/Social Services: The rehabilitation of the trauma patient and the continued support of the family members are important parts of the trauma system. Each facility will be required to address a plan for integration of rehabilitation into the acute and primary care of the trauma patient at the earliest stage possible after admission to the trauma center. Level III hospitals will be required to identify a mechanism to initiate rehabilitation services and/or consultation in a timely manner, as well as to develop policies regarding coordination of the Multidisciplinary Rehabilitation Team. Policies must be in place to address the coordination of transfers between acute care facilities and rehabilitation facilities licensed by the State of Mississippi with designated rehabilitation beds. Transfer agreements should include a feedback mechanism for the Rehab/Skilled Nursing facilities to update the health care team on the patient's progress and outcome for inclusion in the trauma registry.

The nature of traumatic injury requires that the psychological needs of the patient and family are considered and addressed in the acute stages of injury and throughout recovery. A Level III trauma center may utilize community resources as appropriate to meet the needs of the trauma patient.

G. Outreach: Level III trauma centers must work cooperatively with referral facilities to develop and implement an outreach program for trauma care in the region. The Level III trauma center will work to plan, facilitate and provide professional education programs for the prehospital care providers, nurses and physicians, from referral facilities in their region.

H. Prevention/Public Education: The Level III trauma center is responsible for working with the other centers to develop education and prevention programs for the public and professional staff. The plan must include implementation strategies to assure information dissemination to all residents in the region.

I. Transfer Protocols: The Level III trauma center will have transfer protocols in place with Level I and Level II trauma centers, as well as all specialty referral centers (such as burn, pediatrics, spinal cord injury and rehabilitation). Additionally, transfer protocols must be written with all referral facilities in the immediate service area. All facilities will work together to develop transfer guidelines indicating which patients should be considered for transfer and procedures to assure the most expedient, safe transfer of the patient. The transfer protocols must include a feedback loop so the primary provider has a good understanding of patient outcome and assures this information becomes part of the

trauma registry. All designated facilities will agree to provide services to the trauma patient regardless of their ability to pay. Every effort should be made to repatriate the trauma patient to his/her local community hospital or provider hospital as appropriate.

J. Performance Improvement/Evaluation: A key element in trauma system planning is evaluation. All trauma centers will be required to participate in the statewide trauma registry for the purpose of supporting peer review and performance improvement activities at the local, regional and state levels. Since these data relate to specific trauma patients and are used to evaluate and improve the quality of health care services, this data is confidential as provided in Mississippi Annotated Code §41-59-77. Level I and II trauma facilities may be responsible for direct assistance to Level III, referring facilities in providing data for inclusion in the registry.

Each trauma center must develop an internal Performance Improvement plan that minimally addresses the following key components:

- An organizational structure that facilitates performance improvement (Multidisciplinary Trauma Committee).
- Clearly defined authority and accountability for the program.
- Clearly stated goals and objectives one of which should be reduction of inappropriate variations in care.
- Development of expectations (criteria) from evidenced based guidelines, pathways and protocols. These should be appropriate, objectively defined standards to determine quality of care.
- Explicit definitions of outcomes derived from institutional standards.
- Documentation system to monitor performance, corrective action and the result of the actions taken.
- A process to delineate privileges credentialing all trauma service physicians.
- An informed peer review process utilizing a multidisciplinary method.
- A method for comparing patient outcomes with computed survival probability.
- Autopsy information on all deaths when available.
- Medical nursing audits.

- Review of prehospital care.
- Review of times and reasons for trauma bypass.
- Review of times and reasons for trauma transfers.

Representatives from the Level III trauma center shall participate in the RTACs and the statewide performance review process.

XIV. Level IV Trauma Centers

Level IV trauma centers are generally licensed, small, rural facilities with a commitment to the resuscitation of the trauma patient and written transfer protocols in place to assure those patients who require a higher level of care are appropriately transferred. These facilities may be staffed by a physician, or a licensed midlevel practitioner (i.e. nurse practitioner) or Registered Nurse. The major trauma patient will be resuscitated and transferred. This categorization does not contemplate that Level IV hospitals will have resources available for emergency surgery for the trauma patient.

Level IV trauma centers may meet the following standards in their own facility through a formal affiliation with another trauma center.

I. HOSPITAL ORGANIZATION

A. Trauma Program

There must be a written commitment on behalf of the entire facility to the organization of trauma care. A trauma program must be established and recognized by the organization. It is desirable that the trauma program be managed by a physician who is committed and willing to provide off-line administration of the program. This oversight may be accomplished with an affiliation with another designated trauma center in the region.

B. Trauma Team

The team approach is optimal in the care of the multiple injured patient. However, it is recognized that Level IV Trauma Centers may not have this capability or have extremely limited capabilities. All physicians or midlevel practitioners on the trauma team responsible for directing any phase of the resuscitation must maintain current certification in ATLS. Suggested composition of the trauma team includes, if available:

- Physicians
- Specialists
- Laboratory Technicians
- Nursing
- Auxiliary Support Staff

C. Medical Director

The Level IV trauma center must have a physician director of the trauma program. This may be accomplished through a written agreement with a higher level trauma center. In this instance the physician is responsible for working with all members of the trauma team, participating in the regional evaluation process, and developing a performance improvement process for the facility. Through this process, he/she

should have overall responsibility for the quality of trauma care rendered at the facility. The director must be given administrative support to implement the requirements specified by the Mississippi Trauma Plan. The director should assist in the development of standards of care and assure appropriate policies and procedures are in place for the safe resuscitation and transfer of trauma patients. The physician director must have current certification in ATLS and participate in continuing medical education (CME) related to trauma care. It is desirable to have the director maintain 48 hours of CME in trauma education every three years. This role may be accomplished through an affiliation with another designated trauma center .

NOTE: ATLS requirement may take up to five years to obtain. After January 1, 2004, physicians must obtain ATLS within one year. **This ATLS verification must be recognized by the American Board of Medical Specialities. ATLS requirements is waived for Board Certified Emergency Medicine and Board Certified General Surgery Physicians.**

D. Multidisciplinary Trauma Committee

In a Level IV trauma center this does not need to be a separate distinct body, but rather, the functions of this committee may be performed in conjunction with other ongoing committees in the facility. This function may be accomplished with an affiliation with another designated trauma center in the region.

E. Trauma Program Manager/TPM

A Level IV trauma center must have a person to act as a liaison to the regional evaluation process to conduct many of the administrative functions required by the trauma program. It is not anticipated that this would be a full-time role. Specifically, this person is responsible, with the medical director, for coordinating optimal patient care for all injured victims. There are many requirements for data coordination, performance improvement, and education and prevention activities incumbent upon this position. The Level IV trauma center may be able to have these activities accomplished through an affiliation with another designated trauma center in the region.

II. CLINICAL CAPABILITIES

Level IV trauma centers must maintain published on-call schedules for physicians or mid-level practitioners on-call to the facility.

A. Emergency Department

The facility must have an emergency department staffed so trauma patients are assured immediate and appropriate initial care. It is not anticipated that a physician will be available on-call to an emergency department in a Level IV trauma center, however it is a desirable characteristic of a Level IV. The on-call

practitioner must respond to the emergency department based on local written criteria. A system must be developed to assure early notification of the on-call practitioner. Compliance with this criterion must be documented and monitored by the PI process.

Level IV trauma centers must have a written policy for notification and mobilization of an organized trauma team to the extent that one is available. Additionally, written policy shall be in place for pre-activation of the transfer team from the field based on prehospital triage criteria. There must be written transfer protocols with other trauma facilities in the region. A policy must be in place to facilitate and expedite the transfer sequence to assure the most appropriate care is rendered. Protocols must be in place for specialty referral for pediatrics, burns and spinal cord rehabilitation.

There must be a written plan ensuring nurses maintain ongoing trauma specific education. Adequate numbers of nurses must be available in-house 24 hours/day, to meet the need of the trauma patient. The RN may perform other patient care activities within the hospital when not needed in the emergency department.

A complete list of required equipment necessary for the ED can be found in Appendix C of this document.

B. Surgical Suites

Level IV trauma centers are generally small remote/rural facilities and are not expected to have any surgical capabilities. It is anticipated that all trauma patients will be transferred to a higher level facility as soon as appropriate.

C. Intensive Care Unit

Due to the nature of Level IV trauma centers, all patients requiring critical care services should be transferred to a higher level trauma facility.

III. CLINICAL SUPPORT SERVICES

It is not anticipated that a Level IV trauma center have any of the following services available:

- Respiratory Therapy Services
- Radiology Services
- Clinical Laboratory Services

Should any of these services be available, the facility should make them available to the trauma patient as necessary and within the capabilities of the facility.

A. Acute Hemodialysis: There must be a written transfer agreement with a facility that provides this service if this service if it is not available at the Level IV

trauma center.

B. Burn Care: There must be a written transfer agreement to the closest Burn Center if this service is unavailable at a Level IV trauma center. Policies and procedures should be in place to assure the appropriate care is rendered during the initial resuscitation and transfer of the patient.

C. Prevention/Public Education: The Level IV trauma center is responsible for working with other trauma centers to develop education and prevention programs for the public and professional staff. The plan must include implementation strategies to ensure dissemination to all residents in the region.

D. Transfer Protocols: Transfer protocols must be written with other trauma centers in the region and appropriate speciality referral centers (i.e. burn, pediatrics and rehabilitation). All facilities will work together to develop transfer guidelines indicating which patients should be considered for transfer and procedures to ensure the most expedient, safe transfer of the patient. The transfer guidelines need to make certain that feedback is provided to the facilities and assure that this information becomes part of the trauma registry. All designated facilities will agree to provide service to the trauma patient regardless of their ability to pay.

Transfer protocols must be written for specialty referral centers such as pediatrics, burn or spinal cord injury when these services are not available at the trauma center. The transfer protocols must include a feedback loop so that the primary provider has a good understanding of the patient outcome.

E. Performance Improvement/Evaluation: A key element in trauma system planning is evaluation. All trauma centers will be required to participate in the statewide trauma registry for the purpose of supporting peer review and performance improvement activities at the local, regional and state levels. Since these data relate to specific trauma patients and are used to evaluate and improve the quality of health care services, this data is confidential and will be governed by the Mississippi Annotated Code §41-59-77. Level I, II and III trauma facilities will be responsible for direct assistance to Level IV referring facilities in providing data for inclusion in the registry.

Representatives from the Level IV trauma center shall participate in the Regional Trauma Advisory Committee.